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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 60469-113	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/31871	International filing date (day/month/year) 08 October 2003 (08.10.2003)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC IPC(7): B66B 1/20, 1/34 and US Cl.: 187/247, 382, 383		
Applicant OTIS ELEVATOR COMPANY		

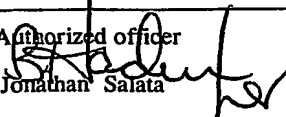
1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 07 June 2004 (07.06.2004)	Date of completion of this report 17 December 2004 (17.12.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer  Jonathan Salata Telephone No. 703-308-0956



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/31871

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed.
- ☒ the description:  
pages 1-6 as originally filed  
pages NONE, filed with the demand  
pages 7, filed with the letter of 15 November 2004 (15.11.2004).
- ☒ the claims:  
pages NONE, as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages NONE, filed with the demand  
pages 10-12, filed with the letter of 15 November 2004 (15.11.2004)
- ☒ the drawings:  
pages 1-3, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages None
- ☒ the claims, Nos. None
- ☒ the drawings, sheets/fig None

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/US03/31871

## V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. STATEMENT

Novelty (N)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-24</u>	NO
Industrial Applicability (IA)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO

### 2. CITATIONS AND EXPLANATIONS

Claims 1-24 lack an inventive step under PCT Article 33(3) as being obvious over Suozzo et al (3648805) in view of MacDonald et al (5883343). Suozzo et al teaches an elevator system group controller which provides for sector control of call allocation. The sector assignments are changed based on peak periods (time of day) which takes into account capacity by previous demand.

Suozzo et al does not teach changing of sectors based on capacity.

MacDonald et al teaches that for improved peak optimization, it is advantageous to provide an "override" of assignments in an elevator group controller based on capacity to improve efficiency.

Thus, to utilize the override of MacDonald et al within Suozzo et al to improve efficiency, would have been an obvious engineering design choice to one of ordinary skill in the art.

Claims 1-20 meet the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.



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CLAIMS

I claim:

1. A method of controlling traffic in an elevator system, comprising the steps of:  
assigning a plurality of elevator cars to respective sectors;  
5 determining a handling capacity of the elevator system; and  
selectively controlling at least one of the cars to travel to a destination outside  
of the respective, assigned sector responsive to a destination indication from at least  
one passenger when the determined handling capacity is within a selected range.
- 10 2. The method of claim 1, including initially assigning a car to the one passenger  
based upon the sector to which the destination indication belongs and then reassigning  
the passenger to a different car that has a departure time that is earlier than the  
initially assigned car.
- 15 3. The method of claim 2, including reassigning the passenger to the different car  
if the handling capacity is within the selected range.
4. The method of claim 2, including reassigning the passenger to the different car  
if the destination indication is within a sector to which the different car is assigned.
- 20 5. The method of claim 2, including repeatedly reassigning the passenger to a  
different car that has an earlier departure time than a currently assigned car.
6. The method of claim 1, including determining a value of the handling capacity  
25 and comparing the determined value to a selected threshold.
7. The method of claim 6, including using a randomly generated number from  
within a selected range as the threshold.
- 30 8. The method of claim 1, including overriding the sector assignment of the one  
car when the handling capacity is below a selected threshold.



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9. The method of claim 8, wherein the selected threshold corresponds to a heavy traffic volume and the capacity is near a maximum capacity.
10. The method of claim 1, including maintaining the respective sectors assigned to the elevator cars while temporarily overriding the sector assignment of the at least one of the cars.
11. The method of claim 1, including selectively controlling the at least one car to travel to the destination outside of the assigned sector only during off-peak travel conditions.
12. An elevator system, comprising:  
a plurality of elevator cars; and  
a controller that determines a handling capacity of the elevator system,  
determines a destination of at least one passenger and selectively controls at least one of the cars to travel to a destination outside of a sector assigned to the one car responsive to the determined destination when the determined handling capacity is within a selected range.
13. The system of claim 12, wherein the controller determines departure times of each of the cars from a base floor, the controller initially assigns a car to the one passenger based upon the sector to which the destination indication belongs and wherein the controller reassigns the passenger to a different car that has a departure time that is earlier than the initially assigned car.
14. The system of claim 13, wherein the controller reassigns the passenger to the different car if the handling capacity is within the selected range.
15. The system of claim 13, wherein the controller reassigns the passenger to the different car if the destination indication is within a sector to which the different car is assigned.



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16. The system of claim 13, wherein the controller repeatedly reassigns the passenger to a different car that has an earlier departure time than a currently assigned car.

5 17. The system of claim 12, wherein the controller determines a value of the handling capacity and compares the determined value to a selected threshold.

18. The system of claim 17, wherein the controller uses a randomly generated number from within a selected range as the threshold.

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19. The system of claim 12, wherein the controller overrides the assigned sector when the handling capacity is below a selected threshold.

20. The system of claim 19, wherein the selected threshold corresponds to a heavy traffic volume and the capacity is near a maximum capacity.

21. The system of claim 12, including a primary destination entry location outside of the elevator cars that is useable by a passenger to provide a destination indication and wherein the controller prioritizes the travel of the passenger based upon whether the passenger entered the destination indication at the primary entry location.

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22. The system of claim 12, including a display that provides passengers with an indication of the car to which they are assigned.

23. The system of claim 12, wherein the controller maintains the sector assignment of the elevator cars while controlling the at least one car to travel to the destination outside of the sector assigned to the at least one car.

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24. The system of claim 12, wherein the controller controls the at least one elevator car to travel to the destination outside of the assigned sector only during off-peak travel conditions.

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Given this description, those skilled in the art will be able to program an elevator system controller to perform the functions described above. Similarly, those skilled in the art who have the benefit of this description will be able to select from among commercially available computers, processors, electronics, hardware, firmware, software or a combination of these to realize a controller that performs the functions described above.

Other functions for determining the handling capacity and the advisability of overriding a sector assignment are within the scope of this invention. Those skilled in the art who have the benefit of this description will realize what factors to consider and how to weigh them to best meet the needs of their particular situation.

In another example, the inventive control strategy addresses situations where a passenger bypasses an early destination entry device and only enters their destination using a car operation panel within an elevator car. According to one example, the controller determines whether such a destination entry fits within the sector of the car chosen by that passenger. If the passenger's intended destination is outside of that car's assigned sector, the controller uses the inventive strategy to determine whether overriding the normal sector assignment is acceptable. Under conditions where the handling capacity will permit overriding the sector assignment, that car will be controlled in a manner to take that passenger to their intended destination floor even though it is not within the normal sector serviced by that car.

In one example when a passenger bypasses an early destination entry device and simply selects a floor within a car using the car operating panel, that passenger's destination is given lowest priority when that destination is outside of the car's assigned sector. Such an embodiment may provide passenger's more incentive to use the early destination entry devices, which enhances the elevator system's ability to manage traffic flow in the most efficient and effective manner.

Figures 4A-4C show one advantage of a system designed according to this invention. Figure 4A schematically shows a plurality of passengers that have entered their destinations prior to entering an elevator car. In this example, the elevator car 22 is assigned to a sector that serves floors 3-5 while the car 24 is assigned to a sector that serves floors 6-8. The passengers 90 are shown from left to right in the order that